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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/755,826	01/04/2001	Charles W. Pearce	PEARCE 26	5388

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EXAMINER
CHEN, JACK S J

ART UNIT	PAPER NUMBER
2813	5

DATE MAILED: 10/24/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

KLC

Office Action Summary

Application No.	Applicant(s)
09/755,826	Pearce
Examiner	**Art Unit**
Jack Chen	2813

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *Jan 4, 2001*.

2a) ☐ This action is **FINAL.** 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above, claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-20* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9) ☒ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on *Jan 4, 2001* is/are a) ☐ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____
4) ☐ Interview Summary (PTO-413) Paper No(s). _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

1. In response to the communications dated January 4, 2001, claims 1-20 are active in this application.

Oath/Declaration

2. Oath/Declaration filed on January 4, 2001 has been considered.

Drawings

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: figures 2-6, the label "205". A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

4. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

5. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

Regarding claims 6-7, 16-17, the phrase "diffusing the second dopant includes diffusing a *second P-type dopant*" is not supported by the specification.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 6-7, 16-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 6-7, 16-17, the phrase "diffusing the second dopant includes diffusing a *second P-type dopant*" lacks antecedent basis (i.e., where is the first P-type dopant?).

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -

(e) the invention was described in-
(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

9. Claims 1-3, 5, 6, 8, 10, 11-13, 15, 16, 18, 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Akaishi et al., U.S./6,255,154 B1.

Akaishi et al. discloses a method for forming a semiconductor device, which comprises fabricating laterally diffused metal oxide semiconductor (LDMOS) transistors (fig. 1, col. 2, lines 34-43; col. 6, lines 32-38), including forming lightly doped source/drain region 22A with a first dopant, the lightly doped source/drain region located between first and second isolation structures 9 (fig. 1); and creating a gate 7A over the lightly doped source/drain region (fig. 1); depositing interlevel dielectric layers 13 (figs. 11A-11B, col. 6, lines 46-50) over the LDMOS transistors; and creating interconnect structures 10/11 (figs. 11A-11B, col. 6, lines 46-50) in the interlevel dielectric layers and interconnecting the LDMOS transistors to form an operative-integrated circuit, see figs. 1-11B, cols. 1-8.

Re claims 2 and 12, wherein forming includes forming a lightly doped source/drain region with a first N-type dopant (fig. 2).

Re claim 3 and 13, wherein the first N-type dopant has an implant dose ranging from about 1E12 to about 1E13cm-2 (fig. 2).

Re claims 5 and 15, further including diffusing a second dopant at least partially across the lightly doped source/drain region and under the gate to form a first portion of a channel 8 (figs. 1 and 6).

Re claims 6 and 16, wherein diffusing the second dopant includes diffusing a second p-type dopant having an implant dose ranging from about 1E13 to about 1E14cm-2 (fig. 6).

Re claims 8 and 18, further including placing a heavy concentration of the first dopant in a region adjacent a source side of the gate, and in the lightly doped source/drain region adjacent a drain side of the gate (fig. 7).

Re claims 10 and 20, wherein placing includes placing an implant dose of the first dopant ranging from about 1E15 to about 1E16cm-2 (fig. 7).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 4, 7, 9, 14, 17, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akaishi et al., U.S./6,255,154 B1.

Akaishi et al. disclosed above; however, Akaishi et al. do not explicitly show the dose of first dopant is about 5E12cm-2 (Re claims 4 and 14), the dose of the second dopant is about 100 times higher than the dose of the first dopant (Re claims 7 and 17) and placing the heavy concentration of the first dopant at a distance ranging from about 2000 to 3000 nm from the drain side of the gate (Re claims 9 and 19).

Although the exact ranges of the instant claims 4, 14, 7, 17, 9 and 19 are not explicitly stated by Akaishi et al. in the related text, it appears that the general conditions of a claims 4, 14, 7, 17, 9 and 19 are disclosed by Akaishi et al.; therefore, claims 4, 14, 7, 17, 9 and 19 appear to be ***Prima facie*** obvious over Akaishi et al. Furthermore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of Akaishi et al. by selecting the suitable dosages for the first and second dopants, and distance from the gate, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jack Chen whose telephone number is (703) 308-5838. The examiner can normally be reached on Monday-Friday (alternate Monday off) from 8:30 am to 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl W. Whitehead, Jr., can be reached on (703)308-4940. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

Jack Chen

JACK CHEN
PATENT EXAMINER

October 21, 2002